Tinghui Zhu

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Education

Fudan University 2022/09 – 2025/06
Master of Science in Computer Science Shanghai, China
- Advisor: Yanghua Xiao

Fudan University 2018/09 – 2022/06
Bachelor of Science in Computer Science Shanghai, China
- Undergraduate Researcher @ Knowledge Works Research Laboratory

Research Papers

Under Review

1. *Towards Visual Taxonomy Expansion*
   Tinghui Zhu, Jingping Liu, Haiyun Jiang, Yanghua Xiao, Zongyu Wang, Rui Xie, Yunsen Xian

Publications

1. *End-to-end Entity Linking with Hierarchical Reinforcement Learning* [AAAI 23]
   Lihan Chen, **Tinghui Zhu**, Jingping Liu, Jiaqing Liang, Yanghua Xiao

Research Experience

Multi-modal Hypernymy Detection 2022/06 – 2022/12
- Utilized term images to extend the semantics of given terms, distinguishing prototypical hypernyms from real hypernyms and improving the comprehension of unseen terms.
- Adopted prototypical contrastive clustering to generate high-level visual semantics for hypernym lacking visual features, avoiding the collapsing problem that typically occurs in deep clustering. Generated interesting visual clusters that represent different semantics from textual ones.
- Designed heurisitc modality fusion methods from observations of preliminary experiments.
- Applied on Meituan platform and designed an automatic hypernymy detection workflow that consistently acquire hypernymy pairs from query-click logs.

Clue Understanding 2022/01 – 2022/05
- Constructed a comprehensive clue understanding dataset from crossword puzzles, aiming to detect the ability of understanding ambigious and short natural language, knowledge capability, and reasoning ability.
- Splitted the dataset according to the semantic similarity of clues, focusing on the understanding of the clues, rather than memorization.
- Tested multiple baselines on the dataset, including text retrieval, KNN, OpenQA methods (Dense Passage Retrieval), and generative language models (T5). The results showed incapbility of current natural language processing methods in solving our proposed dataset.

Hyperymy Detection as NER 2022/10 – 2023/03
- Transfered NER method to hypernymy detection task by viewing extracting hypernymy pairs as a tagging task. Adopted Global Pointer to extract hypernymy pairs from query-click logs.
- Designed a joint training framework that extracted hypernym first and used it as the prompt to extract hyponym.

Projects

ChineseBlip2 2023/04 – Now
- Translated multiple image-text datasets using ChatGPT and applied diffusion models to generate high-quality image-text pairs, enhancing the generalizability of existing Chinese datasets.
- Pretrained Blip2 based on the instruction-finetuned BloomZ+LoRA. During stage 1, aligned image-text pairs on translated and existing Chinese datasets. During stage 2, constructed a instruction finetuning dataset and designed new input formatss for instruction-finetune LLM.